


- Spring return rotary actuators: For ball valves DN 15...20
- Torque: 2 Nm
- Modulating control TRF24-SR (AC/DC 24 V)
- Floating (3-point) control TRF24-2 (AC/DC 24 V)
- Open/Close control TRF24(-S) (AC/DC 24 V); TRF230(-S) (AC 100...240 V)



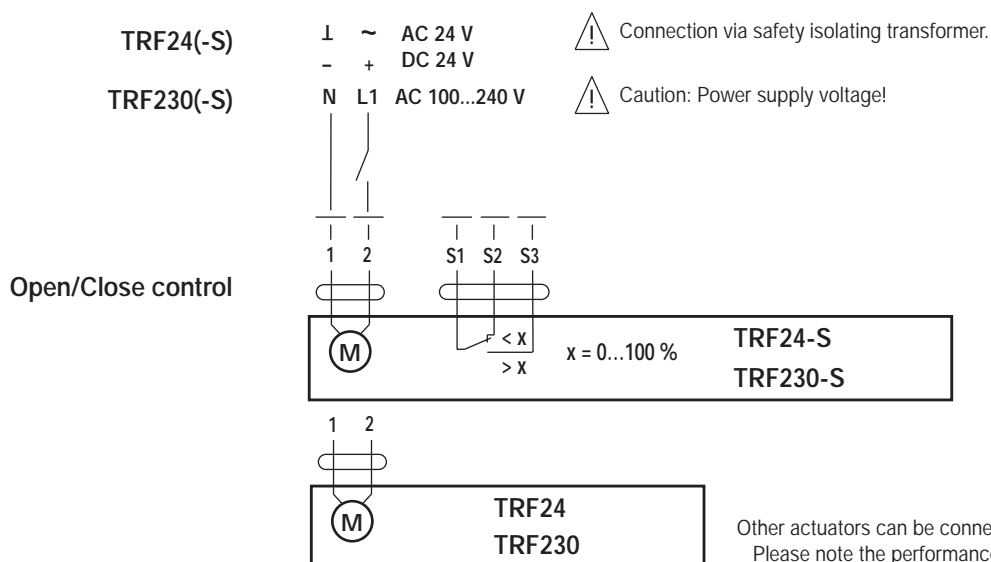
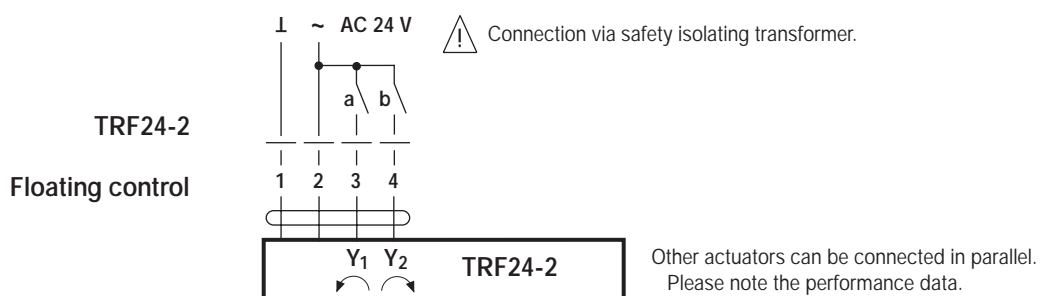
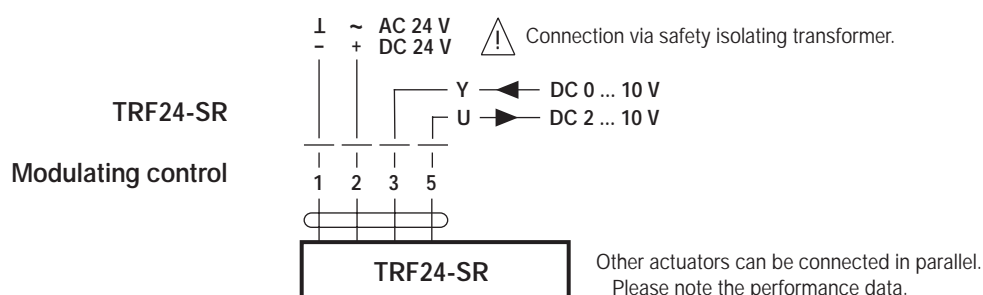
Technical data

Basic technical data	Connection	1 m, 0.75 mm ²
	Torque	Motor: 2 Nm; Spring return: 2 Nm
	Angle of rotation	95°
	Sound power level	Motor: Max. 50 dB (A), Spring return: 62 dB (A)
	Position indication	Mechanical
	Degree of protection	IP42
	EMC	CE according to 89/336/EEC
	Ambient temperature	-5 ... +50°C
	Non-operating temperature	-5 ... +80°C
	Temperature of medium	-5 ... +100°C
	Humidity test	To EN 60730-1
	Maintenance	Maintenance-free
TRF24-SR	Power supply range	AC 19.2... 28.8 V; DC 21.6... 28.8 V
	Power consumption	2.5 W @ running / 1 W @ holding
	Transformer sizing	4 VA
	Control signal	0...10 VDC @ 100 kΩ input impedance
	Operating range	2...10 VDC
	Position feedback	2...10 VDC
	Direction of rotation	Motor: Reversible with L/R switch; Spring return: reversible by mounting L/R
	Protection class	III (safety low voltage)
	Running time	Motor: < 150 s; spring return: < 25 s (-5... +50°C) / Max. 60 s (-30°C)
TRF24-2	Weight	0.6 Kg
	Power supply range	AC 19.2... 28.8 V; DC 21.6... 28.8 V
	Power consumption	2.5 W @ running / 1 W @ holding
	Transformer sizing	4 VA
	Direction of rotation	Motor: Reversible with L/R switch; Spring return: reversible by mounting L/R
	Protection class	III (safety low voltage)
TRF24(-S)	Running time	Motor: 40... 75 s; spring return: < 25 s (-5... +50°C) / Max. 60 s (-30°C)
	Weight	0.6 Kg
	Power supply range	AC 19.2... 28.8 V; DC 21.6... 28.8 V
	Power consumption	2.5 W @ running / 1.5 W @ holding
	Transformer sizing	5 VA
	Direction of rotation	Spring return reversible by mounting L/R
TRF230(-S)	Auxiliary switch (TRF24-S)	1 X SPDT, 1 mA ...3(0.5) A, AC 250 V, 0... 100% adjustable
	Protection class	III (safety low voltage)
	Running time	Motor: 40... 75 s; spring return: < 25 s (-5... +50°C) / Max. 60 s (-30°C)
	Weight	0.6 Kg
	Power supply range	AC 85 ... 265 V
	Power consumption	2.5 W @ running / 1.5 W @ holding
TRF230(-S)	Transformer sizing	5 VA
	Direction of rotation	Spring return reversible by mounting L/R
	Low voltage directive	CE according to 73/23/EEC
	Auxiliary switch (TRF230-S)	1 X SPDT, 1 mA ...3(0.5) A, AC 250 V, 0... 100% adjustable
	Protection class	II (Totally insulated) 
	Running time	Motor: 40... 75 s; spring return: < 25 s (-5... +50°C) / Max. 60 s (-30°C)
TRF230(-S)	Weight	0.6 Kg

Product features

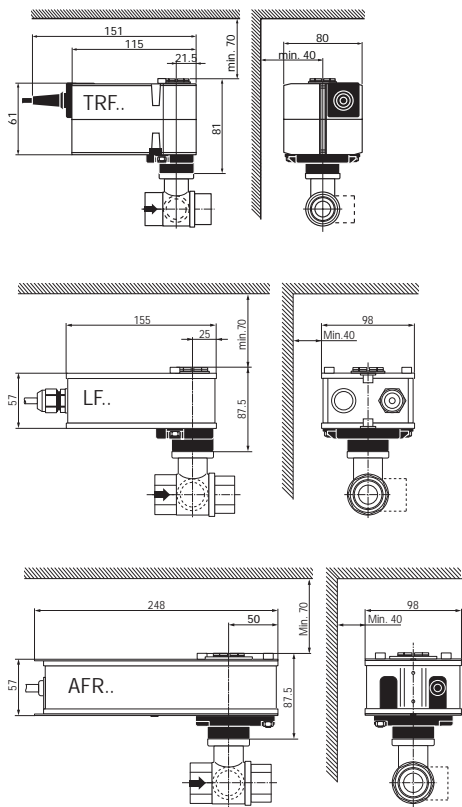
Simple direct mounting	Simple direct mounting on the ball valve using only one screw.
Manual operation	No manual operation.
High function reliability	The actuator is overload-proof, needs no limit switches, stops automatically at the end stops.

Wiring



Dimensions

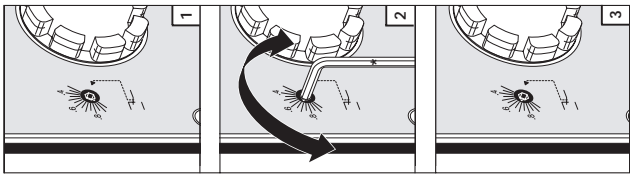
Measurement [mm]



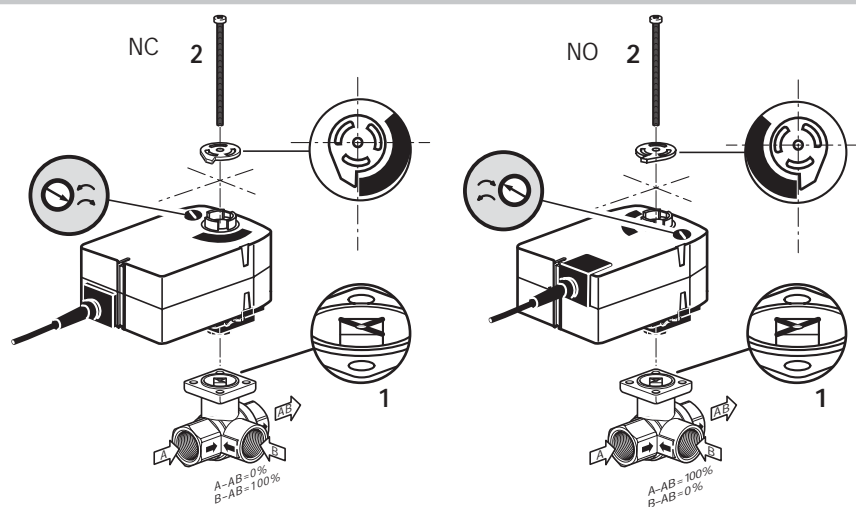
Adjusting AFR.. -S auxiliary switches

Initial situation: Actuator in safety position

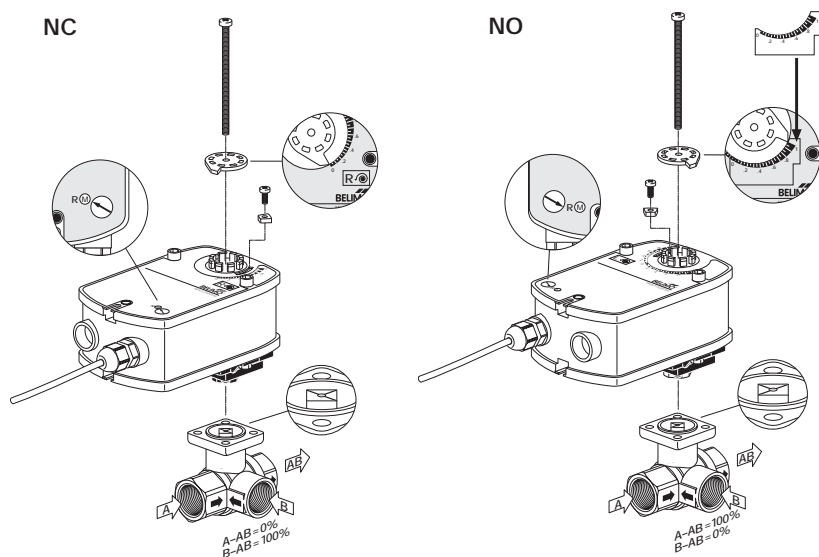
3 mm (1/8") hexagonal key not included with the actuator



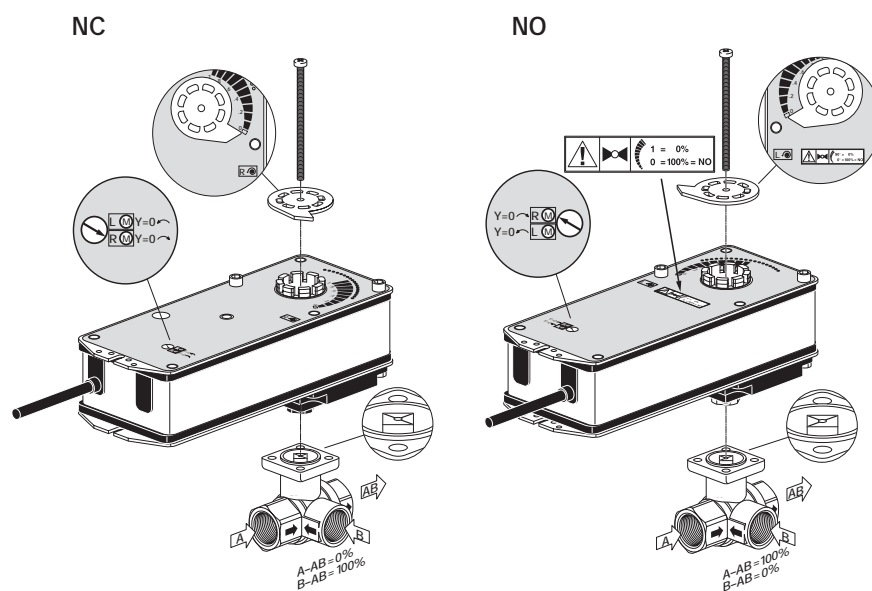
Installation procedures: TRF..



Installation procedures: LF..



Installation procedures: AFR..



R2.. Characterized control valves, 2-way

Selection R2.. Characterized control valves, 2-way

Kvs m ³ /h	DN		Type	Suitable rotary actuators Modulating DC 0...10 V		Suitable rotary actuators 3-point	
	mm	Imp.		Non-spring return	Spring return	Non-spring return	Spring return
0.63	15	1/2"	R209	TR24-SR AC/DC 24 V	LF24-MFT2 AC/DC 24 V	TR24-3 AC 24 V	LF24-3 AC/DC 24 V
1	15	1/2"	R210				
1.6	15	1/2"	R211				
2.5	15	1/2"	R212				
4	15	1/2"	R213				
4	20	3/4"	R217				
6.3	15	1/2"	R214				
6.3	20	3/4"	R218				
8.6	20	3/4"	R219				
6.3	25	1"	R222				
10	25	1"	R223	LR24-MFT US AC/DC 24 V	LF24-MFT2 AC/DC 24 V	TR230-3 AC 230 V	LF24-3 AC/DC 24 V
10	32	1 1/4"	R229				
16	25	1"	R224	NM24-MFT2 AC/DC 24 V	NR24-SR AC/DC 24 V	NR24-3(-S) AC 24 V	AFR24-3(-S) US AC 230 V
16	32	1 1/4"	R231				
16	40	1 1/2"	R238	NR24-SR AC/DC 24 V	AFR24-SR AC/DC 24 V	NR230-3(-S) AC 230 V	AFR24-3(-S) US AC 230 V
25	40	1 1/2"	R239				
25	50	2"	R248	NR24-SR AC/DC 24 V	AFR24-SR AC/DC 24 V	NR230-3(-S) AC 230 V	AFR24-3(-S) US AC 230 V
40	50	2"	R249				

Important

Sizing diagram for CCV: page 5
Please note the information provided on pages 2, 29 and 30 regarding use, installation, project design, commissioning and maintenance
Pipe connectors can be supplied as an accessory: page 24

Technical data R2.. Characterized control valves, 2-way

Flow media	Cold and hot water, water with max. 50% volume of glycol
Temperature of medium	-5°C...100°C
Rated pressure Ps	2760kPa DN32-DN50; 4140 kPa DN15-DN32
Flow characteristic	Control path A-AB: equal percentage (to VDI/VDE 2173) DN15* n(ep)=3.2, optimized in opening range DN20 ...50** n(ep)=3.9, optimized in opening range
Rangeability	DN15* Sv>50 DN20 ...50** Sv>100
Leakage rate	Air bubble-tight (Bo 1, DIN 3230 Part 3)
Pipe connector	Internal thread to ISO7/1
Differential pressure Δp_{max}	350 kPa (200 kPa for low-noise operation)
Closing pressure Δp_s	1400 kPa
Angle of rotation	90° (Operation range 15°...90°)
Installation position	Upright to horizontal (in relation to the stem)
Maintenance	Maintenance-free

Materials

Body	Forged, nickel-plated brass body
Ball	Stainless steel
Seal	PTFE
Stem	Stainless steel
Stem seal	EPDM
Characterizing disk	TEFZEL

*= Up to 2.5 Kvs; **= And DN15 Kvs > 4

Dimensions and flow direction

DN		Dimension[mm]		Thread	Max. screwing depth [mm]	Weight [kg]
mm	Imp.	L	H	Rp		
15	1/2"	67	45	1/2"	13	0.4
20	3/4"	76	47.5	3/4"	13	0.55
25	1"	87	47.5	1"	17	0.7
32	1 1/4"	105	47.5	1 1/4"	19	0.9
32	1 1/4"	105	52	1 1/4"	19	1.05
40	1 1/2"	111	52	1 1/2"	19	1.15
50	2"	127	58	2"	22	1.8



2-way characterized control valves DN 15...50



For modulating control of cold and hot water

Equal-percentage characteristic

Applications

- Water-side control of air handling apparatus in ventilating and air conditioning systems
- Water-side control in heating systems

Mode of operation

The characterized control valve is operated by a rotary actuator. The actuators are controlled by a standard modulating or 3-point control system and move the ball of the valve - the throttling device - to the opening position dictated by the control signal.

Product features

Equal-percentage characteristic of the flow rate ensured by the integral characterizing disc.

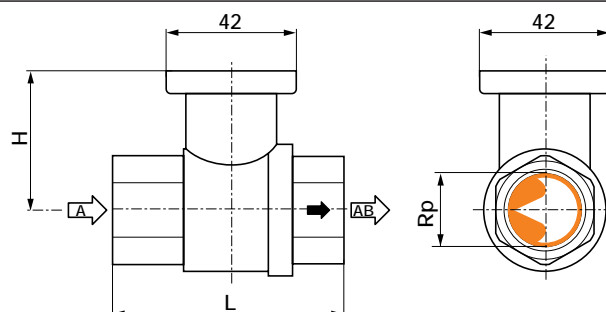
Manual operation by lever after disengaging the gearing latch on the Type TR.., LR.., NR.., NM.. or AM.. rotary actuator (manual operation not possible with LF../AFR..).

Ordering

An order for an R2.. characterized control valve includes a suitable rotary actuator.

Ordering examples: (with NR24-SR)

- R231 characterized control valve with NR24-SR
 - Rotary actuator fitted
 - Order code: R231+NR24-SR
- R231 characterized control valve and NR24-SR
 - Rotary actuator supplied separately
 - Order code: R231/NR24-SR



Selection		R2.. Open-close ball valves, 2-way					
k _{vs} [m³/h]	DN		Type	Suitable rotary actuators			
	mm	Imp.		Non-spring return		Spring return	
8.6	15	1/2"	R215	TR24-3 TR230-3		AC/DC 24 V AC 230 V	
21	20	3/4"	R220				
26	25	1"	R225	LR24(-S) LR230(-S)		LF24(-S) LF230(-S)	AC/DC 24 V AC 230 V
16	32	1 1/4"	R230				
32	32	1 1/4"	R232	NR24-3(-S) NR230-3(-S)	AC 24 V AC 230 V		AFR24(-S) AFR230(-S)
32	40	1 1/2"	R240				
49	50	2"	R250				



2-way open-close ball valves DN 15...50

Shut-off function and 2-point control in cold and hot water circuits

Applications

For shutting off cold and hot water circuits in heating and ventilation systems on the water side or for 2-point control of these circuits.

Mode of operation

The open-close ball valve is operated by a rotary actuator. The rotary actuators are controlled by an open-close signal.

Product features

Manual operation by lever after disengaging the gearing latch on the Type TR.., LR.. or NR.. rotary actuator (manual operation not possible with LF../AFR..).

Ordering

An order for an R2.. open-close ball valve includes a suitable rotary actuator.

Ordering examples: (with NR230-3)

a) R240 open-close ball valve with NR230-3

- Rotary actuator fitted
- Order code: **R240+NR230-3**

b) R240 open-close ball valve with NR230-3

- Rotary actuator supplied separately
- Order code: **R240/NR230-3**

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Technical data

Flow media	Cold and hot water, Water with max. 50% volume of glycol
Temperature of medium	-5°C...100°C
Rated pressure	2760kPa DN32~DN50; 4140 kPa DN15~DN32
Leakage rate	Air bubble-tight (BO 1, DIN 3230 Part 3)
Pipe connector	Internal thread to ISO7/1
Differential pressure Δp_{max}	1000 kPa (200 kPa for low-noise operation)
Closing pressure Δp_s	1400 kPa
Angle of rotation	90°
Installation position	Upright to horizontal (in relation to the stem)
Maintenance	Maintenance-free

Materials

Body	Forged, nickel-plated brass body
Ball	Stainless steel
Seal	PTFE
Stem	Stainless steel
Stem seal	EPDM

Dimensions and flow direction

DN		Dimension [mm]		Thread	Max. screwing depth [mm]	Weight [kg]
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32	1 1/4"	113	52	1 1/4"	19	1.15
40	1 1/2"	113	52	1 1/2"	19	1.15
50	2"	127	58	2"	22	1.9

